

Modification Traveler	Manual Document Page Issue Date	Engineering TFC-ENG-DESIGN-C-56, REV D-5 1 of 20 March 23, 2020
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Ownership matrix	RPP-27195
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1.0 PURPOSE AND SCOPE

(7.1.1, 7.1.2, 7.1.3)

The purpose of the Modification Traveler (MT) is to control the process for modifications to facilities within the Tank Operations Contract (TOC) scope. This includes Structures, Systems, and Components (SSCs) in nuclear and non-nuclear facilities. The MT process ensures that modification activities are carried out and documented in an appropriate manner. The design authority (DA) has overall responsibility for the MT; however, many interdisciplinary reviewers typically provide input to the document. The counterpart to the MT process for small scope changes is provided in TFC-ENG-DESIGN-C-67.

At project initiation, the DA gathers information from various sources based on the project type and complexity to develop the initial release of the MT. This release defines the modification scope, design requirements, and design inputs and is the basis for developing and accepting the design outputs. The final release of the MT attests to the completion of the modification. This release occurs after the DA confirms that the full modification scope is complete.

Plant-installed or support software changes are processed per TFC-ENG-DESIGN-P-12, unless associated with a physical SSC modification.

2.0 IMPLEMENTATION

New MTs initiated on or after the date shown in the header shall be created and processed using SmartPlant® Foundation (SPF), and shall comply with this revision of this procedure. Designs that are in progress without approved design inputs shall cease until design inputs are approved or written approval to proceed is obtained from the Chief Engineer.

3.0 RESPONSIBILITIES

3.1 Design Agent

- Develops design output documents based on approved design inputs.
- Communicates the need for revision of, or additional design inputs to the DA.

3.2 Design Authority

(7.1.3)

- Is responsible for the definition of the engineering scope for the project.
- Is responsible for identification, review, revision, and approval of design inputs.
- Ensures the adequacy of design inputs.
- Ensures the technical acceptability of the modification.
- Manages technical risk.
- Reviews and approves design outputs.

If the MT remains open after project turnover, MT responsibilities transfer to the system DA.

With the exception of approvals, the DA may informally delegate execution of this procedure to qualified Washington River Protection Solutions (WRPS) engineering staff.

3.3 Design Authority Manager

- Validates that adequate control is applied to the modification such as procedural compliance, authorized personnel, and Section II – Required for Design Type 1 Projects of the MT form is filled out properly.
- May be a Project Engineering Manager or Production Operations Engineering Manager.

3.4 Design Engineering Manager (7.1.3, 7.1.4)

- Ensures that the documented scope and design inputs are adequate and approved to begin the design process.
- May informally delegate this responsibility to design engineering staff.
- Ensures compliance with TFC-POL-46.

3.5 Engineering Discipline Lead

- Ensures sufficient design inputs are developed and approved before development of design outputs.
- Is responsible for the technical adequacy of design inputs.

3.6 MT Coordinator

- Performs an administrative review of the MT as part of the design engineering organization to ensure completeness before acceptance of design inputs.
- Coordinates closure of the MT.

3.7 Project Engineer

- When assigned to the modification, coordinates with the Design Authority ensures field work is not performed until Design Verification is complete.
- Identifies design products that must comply with TFC-POL-46.

3.8 Project Engineering Manager (7.1.3)

- Obtains concurrence from the Project Manager and Design Engineering Manager (DEM) on Design Agent selection.
- May be a Project, Production Operations Engineering, or DA manager.

4.0 PROCEDURE

4.1 General Requirements

- The MT is required for designs in accordance with Figure 1.
- MTs are processed by following this procedure, the workflows in SmartPlant® Foundation (SPF), and the MT form. Instructions are provided on the SPF webpage.
- MTs shall be developed in sequential order from Sections 4.2 through 4.5.
- Design outputs shall not be developed until the MT is released per Section 4.2.3.
- Before closure, the MT shall list all design output documents required to complete the modification and all documents impacted by the modification.
- MTs shall be revised per Section 4.6 and cancelled per Section 4.7.

4.2 Design Input Development

The instructions below refer to the data entry windows in SmartPlant used to populate the MT. These steps correspond to the input sections of the MT form.

4.2.1 Start the MT

- | | |
|----------------|--|
| PEM/DA Manager | 1. Assign the DA. |
| DA | 2. Determine Design Type per TFC-ENG-DESIGN-C-52. |
| | <ul style="list-style-type: none"> a. For Single MT projects, select Design Type in accordance with TFC-ENG-DESIGN-C-52. b. For multiple MT projects, use the highest Design Type for the Parent MT, in accordance with TFC-ENG-DESIGN-C-52. |
| | 3. Determine if an MT is required in accordance with Figure 1. |
| | 4. Contact the MT Coordinator at ^WRPS Mod Travelers for assistance in searching for existing MTs to ensure there are no conflicts or overlapping scope with the new MT. |
| | 5. Create a new MT in SPF per TFC-ENG-DESIGN-C-25 and attach the workflow for inputs. |

NOTE 1: The complete set of design inputs, detailed proposed solution, or requirements do not need to be developed in the following step.

NOTE 2: The fields in the MT form are generally self-explanatory. For additional guidance/help, see the form instructions on the SPF forms website.

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NOTE 3: Attachments to the MT may be used in lieu of the text fields in the MT form itself. This is often useful for special formatting needs, or where pictures, tables, or charts need to be used.

6. Update the MT, at minimum fill out the following portions of the form:

- a. Project Number
- b. Project Type
- c. Design Authority
- d. Design Type
- e. Problem/Need Description and Proposed Solution: Enter a description of the problem/need, and give a brief high-level description of the proposed solution.
- f. Justification: Enter a justification for the modification that will address the problem/need (e.g. safety, mission goals, project tasks, efficiency, operations request, etc.).
- g. Determine if Project Design Reviews are required per TFC-ENG-DESIGN-C-52.
- h. For Design Types I & II, determine whether a Major Modification Evaluation and/or a Safety in Design Strategy is required, in accordance with TFC-ENG-SB-C-06.

PEM/DA Manager

7. Determine whether the modification is ready to be initiated at this time.
8. Obtain concurrence from the Project Manager, if applicable, and from the DEM on Design Agency selection.

NOTE: Applicability of the TOC Operational Readiness process for Pilot Projects is determined in accordance with TFC-PRJ-PM-C-06, which may require the use of an Operational Readiness Checklist or other achieving readiness tools.

9. If the modification supports a Pilot Project, initiate the Operational Readiness Worksheet (ORW) screening in accordance with TFC-PRJ-PM-C-04.
10. Inform the DA whether or not the modification will be initiated at this time.

DA

11. If the Hazard Category has not been determined, contact Nuclear Safety and request hazard categorization be performed per TFC-ENG-SB-C-06.

- a. Include document associated with hazard categorization to the

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“Design Inputs” section of the MT in SPF.

- b. Identify the Hazard Category of the facility being modified.

4.2.2 Develop the Design Inputs and Requirements (7.1.3)

Complete the remaining fields and relationship tabs of the MT. Attachment A and the following documents may be used to assist in this process:

- TFC-ENG-DESIGN-D-13.2
- TFC-ENG-DESIGN-D-17.1
- TFC-ENG-DESIGN-D-55.1
- TFC-ENG-DESIGN-P-12.

NOTE: Design inputs can be documented in a specification, and/or the MT. See TFC-ENG-DESIGN-C-01 and/or TFC-ENG-DESIGN-C-34.

- DA
 1. If a safety classification has NOT been established, contact Nuclear Safety and request safety classification be performed per TFC-ENG-SB-C-06.
 - a. Include documents associated with safety classification to the “Design Inputs” section of the MT in SPF.
 2. Identify the highest SSC Safety Classification associated with the modification.
 3. If the Hazard Category has NOT been determined, contact Nuclear Safety and request hazard categorization be performed per TFC-ENG-SB-C-06.
 - a. Include document associated with hazard categorization to the “Design Inputs” section of the MT in SPF.
 4. Identify the Hazard Category of the facility being modified.
 5. Complete the Proposed Solution Detailed Description section of the MT form.
 - a. Document both the intent of the proposed solution and the expectations of the finished design. This should be detailed to the extent necessary to have reasonable assurance that the Design Agent(s) will meet the expectation.
 - b. Do not include excessive details to ensure the Design Agent(s) has latitude in developing the final design.
 6. Identify design input documents and reference documents that are released in SmartPlant by adding them to the “Design Inputs” relationship tab of the MT.

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- Include documents that will be needed by the Design Agent(s) to perform the design, including;
 - Documents that are the source for direct inputs to the proposed design.
 - Documents the Design Agent(s) must be aware of to develop the design.
 - See the MT form instructions for additional guidance.
7. Complete the Design Inputs and Requirements section of the MT form.
- a. Document mandatory inputs specific to the proposed solution that must be used to develop the final design. List the TOC standards and procedures the design must comply with.
 - b. If a standard or procedure is broad in scope, specific sections important to the design may be cited if preceded by the statement, “With emphasis on the following sections.”
8. Complete the Considerations for Design Solution section by providing non-mandatory design related recommendations, suggestions, preferences, or helpful information.
- Non-mandatory project execution information may be provided for information only purposes. Examples include recommended sequence of design output development, design review stages, suggested design verification approach, etc.

NOTE: The DA may schedule a design input team meeting with the Interdisciplinary Reviewers, Design Services, and other stakeholders for the purpose of collecting design inputs and requirements.

9. In accordance with TFC-ENG-DESIGN-C-25 add the following required reviewers/approvers:
- DA Manager
 - Design Engineering.
10. Contact ^WRPS Mod Travelers to have an approver assigned.
- The approver will be the Design Engineering Manager or delegate.

11. Collect and document design inputs from interdisciplinary reviewers and approvers.
12. Perform a Process Hazard Analysis (PrHA) screening in accordance with TFC-ENG-DESIGN-C-35.
13. If required per TFC-ENG-DESIGN-C-35, perform a Process Hazard Analysis.
14. Proceed to the next section.

4.2.3 Review, Approve, and Release Design Inputs

- | | |
|----|---|
| DA | <ol style="list-style-type: none"> 1. As applicable, add the Area Engineer to the distribution tab of the MT when the modification will affect their area of responsibility. 2. When it is determined that sufficient design inputs have been developed to allow the design process to begin, send the MT out for review, approval, and release via the SPF workflow. |
|----|---|

NOTE: Changes to design inputs issued as separate documents such as specifications are performed per the documents controlling procedure (e.g., TFC-ENG-DESIGN-C-01, TFC-ENG-DESIGN-C-25).

3. If Design Inputs need to be changed after the MT is released, revise per Section 4.6.
4. Per TFC-ENG-DESIGN-C-42, determine if a design requirements compliance matrix (DRCM) is required for the project; if so, initiate as directed.

4.3 Design Output Development

- | | |
|--------------|---|
| Design Agent | <ol style="list-style-type: none"> 1. Develop the design output documentation in accordance with the requirements and design inputs of the MT. 2. Transmit the design output to the DA. (This can be accomplished by ensuring the DA is on release distribution for any design output documents.) 3. Certify/seal design products as identified by the WRPS Project Engineer (see TFC-POL-46). (7.1.4) |
|--------------|---|

4.4 Modification Design Output and Impact Review

The DA is responsible for ensuring the technical acceptability of engineering documents. Attachment A provides guidance for performing this review.

NOTE: The instructions below refer to the data entry windows in SmartPlant used to populate the MT form. These steps correspond to the output sections of the MT form.

- | | |
|----|---|
| DA | <ol style="list-style-type: none"> 1. Attach the outputs workflow to the MT. 2. As applicable, ensure Design Verification has been documented, in accordance with TFC-ENG-DESIGN-P-17. 3. Document Design Outputs in the “Design Output Record” section on the MT and add related output documents to the “Design Outputs” relationship tab. 4. Review Section A-3 of Attachment A to identify likely non-engineering impacts, or non-design related activities that will be needed to close out the modification. 5. Document impacts of the modification in the “Impacts” section of the MT, and add related Facility Impacted documents to the “Installation Impacts” relationships tab. <ol style="list-style-type: none"> a. Identify non-engineering impacts, or non-design related activities that will be needed to close out the modification in the “Other impacts” field of the MT. 6. Ensure the activities from Step 4 are completed by their respective responsible organizations and in accordance with their respective procedures. 7. If a DRCM was required, complete it per TFC-ENG-DESIGN-C-42. 8. Identify design related engineering or non-engineering documents related to the modification that need to be developed or updated before turnover. |
|----|---|

The DA may complete the activities identified above, or may delegate them to qualified staff.

Activities completed by other organizations shall be documented in the MT form under “Other Outputs,” “Design Outputs,” or “Impacts,” as appropriate.

The DA may close the MT before these activities are completed only if a PER tracks the remaining activities.

4.5 Closure (7.1.3)

To close an MT, Facility Impacted documents (listed in the “Impacts” section and/or the “Installation Impacts” tab of the MT) must be identified and confirmed to have been appropriately updated.

A design project is considered complete when all of these activities (below) are done. The DA’s closure approval attests that the design project is complete, Facility Impacted Documents are updated as required, the steps below have been executed, and the design is successfully turned over to operations, or for project use.

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WARNING: A workflow to change documented design outputs after the MT is released for closure is currently unavailable. A full revision of the MT, including reapproval of design inputs, is the only method available if revision is required. Therefore, it is important that the DA ensure all design outputs are identified correctly before approving the MT for closure. Although not required, it is recommended that another person familiar with the project ensure that the DA captured all outputs and references on the MT.

NOTE: Incorporation of facility modification impacts into drawings are already implemented by other procedures. Drawing updates are not required for MT closure.

- DA
1. Ensure the following:
 - All associated Engineering Change Notices (ECNs) are work-completed in accordance with TFC-ENG-DESIGN-C-06
 - Design Verification of the entire design is completed prior to relying upon the component, system, structure, or computer program to perform its function
 - All non-drawing facility impacted documents and any associated implementation documents are released
 - All items identified in Section 4.2 and Section 4.4 have been completed and/or released
 - “Project” and/or “Shared” status drawings are converted to “Facility” status as appropriate, using TFC-ENG-DESIGN-C-09 (i.e., the DA Designator is reassigned from a project to Facility/System DA).
 - Impacted “Project” status EINs in SPF, if any, have been updated to “Operational” or “Out of Service” as applicable.
 2. Identify open items and recommended actions with a PER or a project schedule commitment.

NOTE: The only approval required for closure is “Design Authority Closure.”

3. Complete workflow steps to route the MT for closure approval to document control for final approval and release.

4.6 Revision to Design Inputs

- | | |
|----|--|
| DA | <ol style="list-style-type: none"> 1. Per TFC-ENG-DESIGN-C-25, create a new revision of the MT. 2. Attach the “Design Input Workflow” to the MT. 3. For the new revision of the MT, complete applicable workflow steps as described in Section 4.2 of this procedure. |
|----|--|

4.7 Cancellation

- | | |
|----|---|
| DA | <ol style="list-style-type: none"> 1. Cancel the MT per TFC-ENG-DESIGN-C-25. <ol style="list-style-type: none"> a. Provide a justification in the cancelled version of the MT. |
|----|---|

NOTE: Once the MT has been approved for closure, it will continue through the workflow to be processed by Document Control.

- | | |
|--------------|--|
| | <ol style="list-style-type: none"> 2. For MTs that need to be canceled after Design Inputs are approved and provided to the Design Agent, progress the MT through its workflow, ensuring the following: <ul style="list-style-type: none"> • Name of DA has been recorded against DA Closure responsibility using “Assign Responsibilities” • All new output documents generated are cancelled or superseded as applicable to reflect any completed work • Work-completed ECNs in accordance with TFC-ENG-DESIGN-C-06 have been incorporated onto the associated drawing(s). <ol style="list-style-type: none"> a. Update MT “Proposed Solution” and “Design Input Record” to reflect physical work that was completed. b. Enter a Justification for Revision in the “Request for Modification” section of the MT to describe why the MT is being closed prior to original intended closure, and include a description of any work that was actually completed. c. At the “Approve for Closure” step of the workflow, record signature against DA Closure responsibility on the Approvals tab of MT. |
| Design Agent | <ol style="list-style-type: none"> 3. Cancel and/or Supersede design output document(s) related to the MT per the procedure(s) governing the document(s). |

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5.0 DEFINITIONS

Design agent. The person, organization, or vendor that is distinct from the Design Authority developing a design product. Individuals within WRPS preparing ECNs and drawings are as much design agents as are subcontracted A-E firms.

Design constraints. General restrictions and limits to the engineering design process that ensure consistency and quality of design (such as general codes and standards, general regulatory commitments, quality assurance requirements, and good practices, and adopted design methodologies).

Design input. Specific criteria, limits, bases, or other initial requirements (such as specific functional requirements, specific codes and standards, and specific regulatory commitments) upon which the detailed final design is based. In comparison to design constraints, design inputs are specific in nature; i.e., they are specific to one design activity. For example, a design input for a given air-operated valve might be that it needs to open in ten seconds against a differential pressure of 100 psig. Design inputs should consider the effects of the operating environment (e.g., radiation, temperature, pressure, humidity, and chemical spray), material condition, and aging (e.g., erosion, corrosion, fatigue, chloride stress or intergranular stress corrosion cracking, and embrittlement). For example, the design requirements should consider the effects of radiation exposure and aging on elastomeric materials, such as rubber O-rings and Teflon™ tape. It is common to refer to the whole of specific requirements and constraints as design inputs for a particular design.

DA Manager. The DA Manager is the manager to which the DA reports.

Design type. Design Type is a measure of design complexity and is determined in accordance with TFC-ENG-DESIGN-C-52.

Facility impacted documents. Documents changed as a result of implementing the design and turning the design over to Operations.

Interdisciplinary reviewer. A reviewer that is generally in an organization different from the originator, but is a stakeholder in the document being reviewed. They ensure that the document being reviewed is acceptable with respect to their organizational responsibilities, subject matter expertise, duties of their assigned title/role, qualification, or training. (Source: TFC-ENG-DESIGN-C-52).

Modification traveler coordinator. Individual assigned to assist the DEM with tracking MTs from creation to closure.

Pilot project. New activity, or modification to existing activity, of limited scope that will be formally reviewed, approved and deployed for an evaluation period.

6.0 RECORDS

The following records are generated per TFC-ENG-DESIGN-C-25 during the performance of this procedure:

- Modification Traveler.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

- 7.1.1 DOE-STD-1189, "Integration of Safety into the Design Process."
- 7.1.2 TFC-PLN-02, "Quality Assurance Program Description."
- 7.1.3 TFC-PLN-136, "Engineering Design Program."
- 7.1.4 TFC-POL-46, "Professional Engineering Certification and Sealing of Documents."

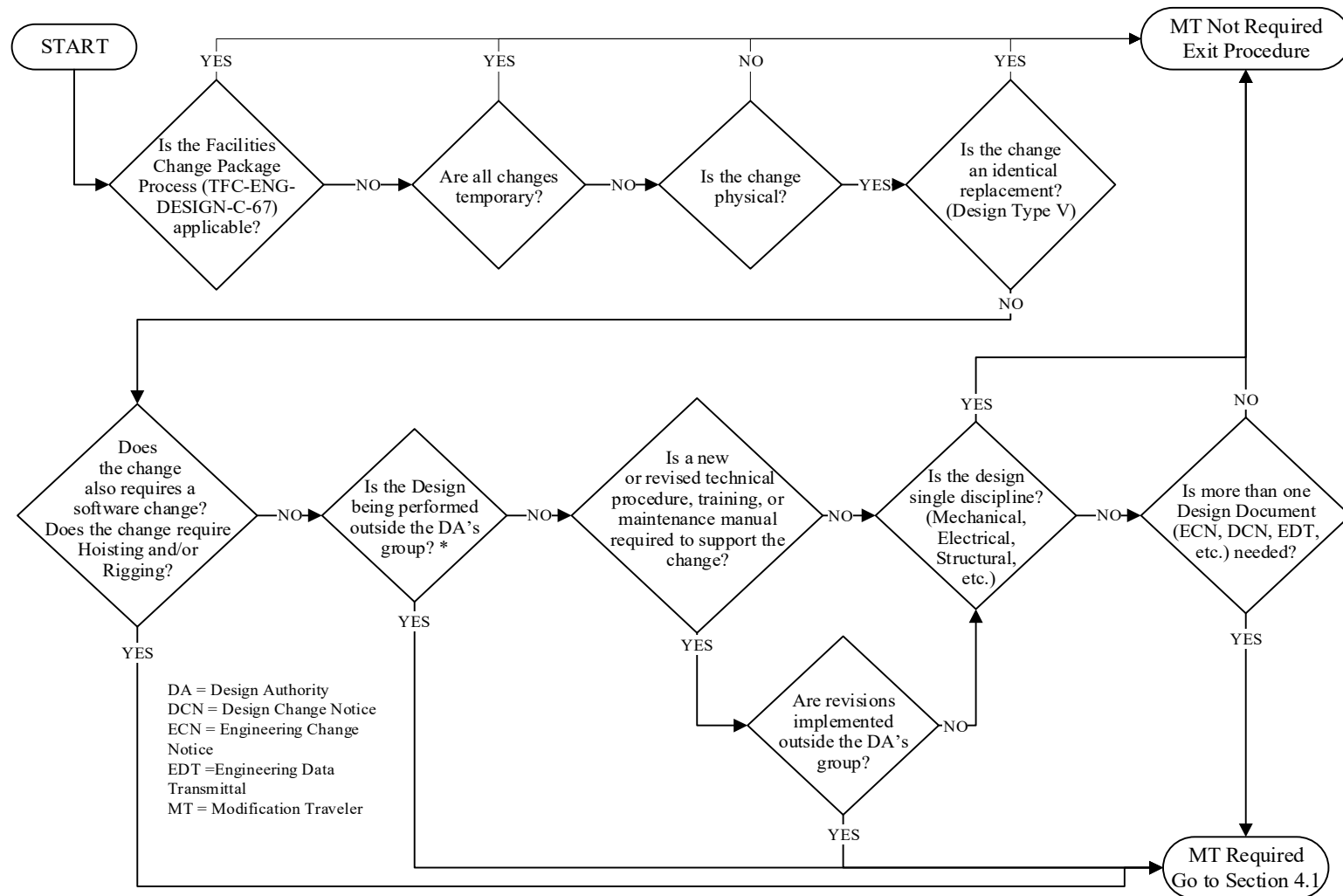
7.2 References

- 7.2.1 DOE-STD-1020-2012, "Natural Phenomena Hazards Analysis and Design Criteria for DOE Facilities."
- 7.2.2 MSC-POL-EU-60619, "Electrical Utilities Right of Way."
- 7.2.3 MSC-PRO-MS-589, "Mission Support Contract Management System Documents."
- 7.2.4 TFC-BSM-IRM_DC-C-02, "Records Management."
- 7.2.5 TFC-ENG-DESIGN-C-01, "Development of TOC Specifications."
- 7.2.6 TFC-ENG-DESIGN-C-06, "Engineering Change Control."
- 7.2.7 TFC-ENG-DESIGN-C-09, "Engineering Drawings."
- 7.2.8 TFC-ENG-DESIGN-C-25, "Technical Document Control."
- 7.2.9 TFC-ENG-DESIGN-C-34, "Development of Technical Requirements for Procurements."
- 7.2.10 TFC-ENG-DESIGN-C-35, "Process Hazard Analysis Determination and Technique Screening."
- 7.2.11 TFC-ENG-DESIGN-C-45, "Control Development Process for Safety-Significant Structures, Systems, and Components."
- 7.2.12 TFC-ENG-DESIGN-C-47, "Process Hazard Analysis."
- 7.2.13 TFC-ENG-DESIGN-C-52, "Technical Reviews."
- 7.2.14 TFC-ENG-DESIGN-C-67, "Facilities Change Package Process."
- 7.2.15 TFC-ENG-DESIGN-D-13.2, "Guidance for Applying Engineering Codes and Standards to Design."

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- 7.2.16 TFC-ENG-DESIGN-D-17.1, "Project Design Review Guidance."
- 7.2.17 TFC-ENG-DESIGN-D-55.1, "Design Input Guide."
- 7.2.18 TFC-ENG-DESIGN-P-12, "Plant Installed Software."
- 7.2.19 TFC-ENG-DESIGN-P-17, "Design Verification."
- 7.2.20 TFC-ENG-DESIGN-P-43, "Control Development Process for Safety-Significant Safety Instrumented Systems."
- 7.2.21 TFC-ENG-SB-C-06, "Safety Basis Development."
- 7.2.22 TFC-PRJ-PM-C-04, "Startup Notification Report."

Figure 1. Modification Traveler Applicability.



* The Design Authority's group is considered to be any personnel that share the same level 2 manager. For example, in this context personnel in the Waste Storage & Technical Support group would be considered as being in the same group as a Design Authority in the Cognizant System Engineering group.

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ATTACHMENT A - MODIFICATION DESIGN OUTPUT AND IMPACT REVIEW

For all activities, check the Lessons Learned webpage located in the WRPS Engineering Toolbox website. Also, review other Lessons Learned resources such as DOE's Operating Experience (OPEX) website.

A.1 DESIGN OUTPUT DOCUMENTS AND ACTIVITIES

- Engineering Drawings
 - Instrument Index
 - Labeling
 - Interlock Table
 - As-builts
 - Drawing Index
 - Process Flow Diagrams
 - Process & Instrumentation Diagrams
 - Site Civil Arrangement
 - Equipment Identification Numbers (EIN)
 - Sealed as required by TFC-POL-46 and/or project engineer.
- Software Configuration Items (Attachment B in TFC-ENG-DESIGN-P-12 provides a checklist of facility impacts that can be used to develop a list of software lifecycle requirements and documentations.)
- Functions and Requirements Evaluation Document (FRED)
- Safety Requirements Evaluation Document (SRED)
- System Design Descriptions SDD/FDD
- System and Subsystem Specifications
- Calculations
- Vendor Information Files/Vendor As-Built Drawings and Request For Information (RFIs).
- Functional Safety Assessment (FSA) report for Safety Instrumented Systems (SIS)
- New or updated Documented Safety Analysis (DSA)
- New or updated Technical Safety Requirements (TSRs) (ORP approval required)
- Nuclear Criticality Safety Evaluations
- Fire Hazard Analysis Report
- IPI Databases
- Scheduled Preventative Maintenance (PMID)
- Code of Record.

A.2 DESIGN RELATED ENGINEERING IMPACTS, DOCUMENTS, AND ACTIVITIES

- Nonconformance Reports (NCRs)
- Quality Assurance Inspection Plans (QAIPs)
- Commercial Grade Dedication (CGD) Packages
- Interfaces external to Tank Operations Contract (TOC); Interface Control Document (ICD), etc., see TFC-BSM-CP_CPR-C-17 also contact Interface Management Group.
- Interfaces internal to TOC; contact respective Design Authorities.
- Environmental and Regulatory Permits
- Independent Qualified Registered Professional Engineer (IQRPE), for design and construction.

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ATTACHMENT A - MODIFICATION DESIGN OUTPUT AND IMPACT REVIEW (cont.)

- Other (Procurement Specs, Turnback Docs, etc.)
- Pressure vessel, rupture/relief valve verification records
- Process Hazards Analysis (PrHA)
- Master Equipment List (MEL)
- Safety Equipment Compliance Database (SECD).

A.3 DESIGN RELATED NON-ENGINEERING IMPACTS, DOCUMENTS, AND ACTIVITIES

- Training courses
- Operating Procedures:
 - Emergency Response Procedures
 - Shift Manager Operability Verification
 - Response to Environmental Conditions
 - Abnormal Operating Procedures
 - Alarm Response Procedures
 - Environmental Functional Test Procedures
 - Functional Test Procedures
 - Operator Rounds
 - Operating Procedures
 - Tank Farm Radiological Controls Procedures
 - Operations Radiological Inspections Procedures
 - Industrial Hygiene Tech Procedures.
- Maintenance Procedures
 - Converter/Transmitter
 - Cooling Water
 - Differential Pressure Transmitters
 - Electrical Distribution System
 - Electrical Generator
 - Emergency Systems
 - Facility/Shop Equipment
 - Flow Controller/Indicator Device
 - Flow Indicating Transmitters
 - General Instrument
 - Gas Monitoring
 - Glycol System
 - Level Control Indicating Devices
 - Leak Detectors and LDE Devices
 - Level Indicating Devices
 - Miscellaneous Maintenance
 - Pressure Control/Indicating Devices
 - Recorder or Associated Devices
 - Radiation Monitoring
 - Service Air
 - Temperature Control/Indicating Devices
 - Ventilation Systems.

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ATTACHMENT A - MODIFICATION DESIGN OUTPUT AND IMPACT REVIEW (cont.)

- Labeling
- Spare Parts
- Test Reports
- Temporary Modifications restored to original
- Emergency Preparedness
- Industrial Safety
- Industrial Hygiene
- Environmental Impacts
- Preventative Maintenance Record
- Operations Impacts
- Operations Shift Briefs
- Maintenance Briefings
- Chemical Inventory
- Radiological Impacts.

A.4 SYSTEM ACCEPTABILITY REVIEW GUIDE

NOTE: The originator and checker/verifier are responsible for the technical accuracy of the document; however, the Design Authority always has the authority to review and comment on technical accuracy, if appropriate.

1. As the Design Authority is the system expert, review for acceptability to the system. Some considerations are, but not limited to:
2. Does the design output comply with the required system's regulatory and performance requirements?
3. Does the design output include consideration for the system's unique physical or material properties?
4. Considering the operating environment (e.g., normal, harsh, available space), does the equipment arrangement and spacing requirements provide adequate accessibility for operation, maintenance, inspection, removal or replacement?
5. Is sufficient detail provided to clarify construction, installation, and inspection methods and requirements?
6. Have adequate post-modification testing requirements been established, especially for state of the art or first of a kind applications?
7. Does the design output identify National Fire Protection Association (NFPA) classified hazard locations and design methods for flammable gas?
8. Does the modification adequately address unique materials requirements for harsh operating environments?
9. Has the modification included provisions to perform tests required to verify performance requirements and calculated values?

ATTACHMENT A - MODIFICATION DESIGN OUTPUT AND IMPACT REVIEW (cont.)

10. Does the modification include evaluation and selection for waste minimization and ALARA?
11. Have all the documents necessary to operate the facility that were affected by the modification been identified, modified and/or created and approved?
12. Does the design provide adequate provision for equipment lock-out/isolation?
13. Has the design appropriately considered design optimization strategies (e.g., appropriate tailoring of requirements, design attributes, and operating strategies?)
14. Has appropriate consideration been given to use of standardized parts, materials and processes?
15. Does the design represent the most reasonably simple design consistent with functional requirements and expected service conditions?
16. Does the design require testing and calibration during installation and operation? If so, is ease of testing and calibration considered under those conditions?
17. Is the quality of the fit and finish specified by the design the least stringent required?
18. Are design tolerances appropriate and applied in a cost-effective manner, and are standard materials and material sizes used where practicable?
19. Does the design take into consideration the effects of wear and tear?
20. Are the specified materials/coatings compatible with each other and with the environmental conditions to which the material will be exposed?
21. Are assembly clearances adequate?
22. Can the hardware be adequately disposed of after use if it is radiologically or chemically contaminated?
23. Have welding, bolting, joining methods been adequately specified?
24. Where feasible, has the design incorporated energy saving devices, or more efficient equipment selections? Was the use of more sustainable materials or manufacturing/construction materials considered?
25. Does the design comply with manufacturer's specific installation instructions/guidance with respect to similar installation configurations?
26. Are hoisting and rigging requirements associated with the design adequately addressed and documented?

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ATTACHMENT A - MODIFICATION DESIGN OUTPUT AND IMPACT REVIEW (cont.)

A.5 SYSTEM INTERFACE REVIEW GUIDE

1. Are there ICD interface owners that need to review or be notified?
2. Is the modification compatible with interfacing equipment, systems, facilities, computers, and personnel (e.g., Electric power, public address, alarms, compressed air, domestic water, etc.)?
3. Do any other Design Authority Engineers need to review for system interfaces?
4. Is this modification completely clear of electrical utility (EU) right-of-way as defined in MSC-POL-EU-60619? And, if not, has a variance been obtained from MSA in accordance with MSC-PRO-MS-589? (Variance is not required for electrical service equipment that originates within the EU right-of-way and runs directly to a location outside of the right-of-way. Service equipment in EU right-of-way is approved by Electrical Service Request, site form A-6002-900.)
5. Does the design meet established requirements for associated system physical and functional interfaces?